

# 13–16GHz High Power Amplifier

GaAs Monolithic Microwave IC

**Target**

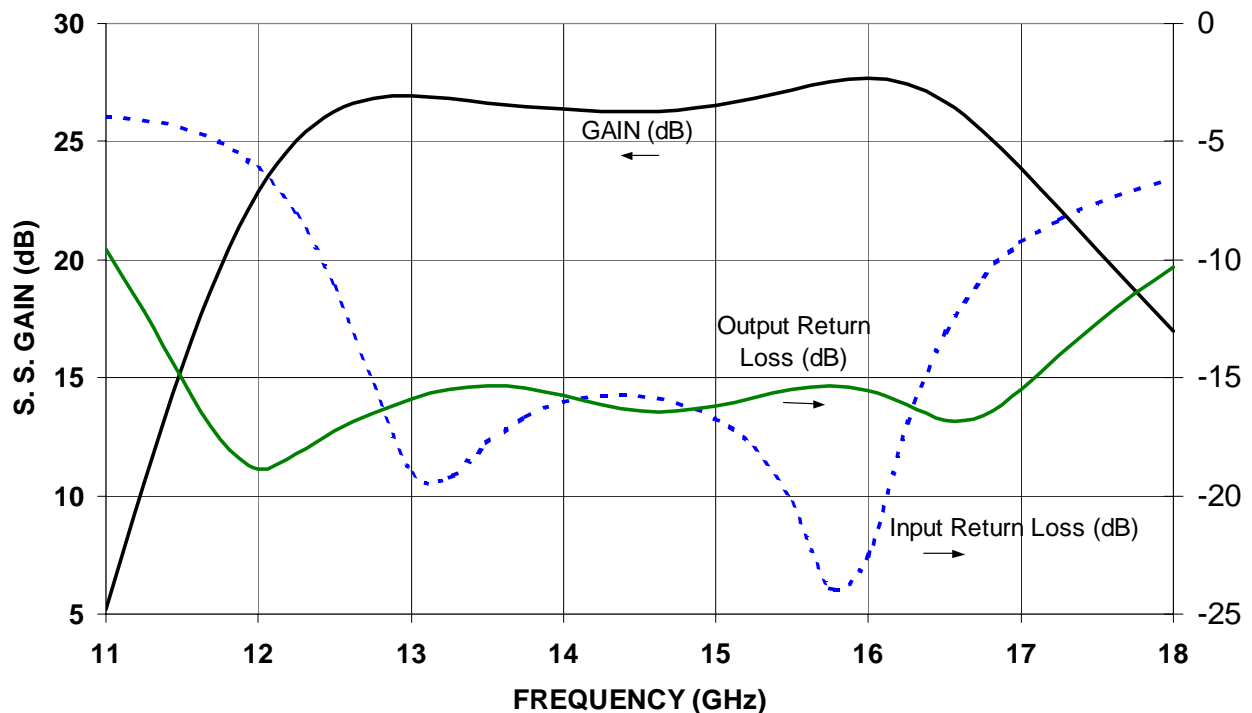
## Description

The CHA5042 is a three-stage pHEMT HPA MMIC designed for VSAT ground terminals and other radio applications. The CHA5042 provides 29.5dBm nominal output power at 1dB gain compression over the 13-16GHz frequency range, and 26dB small-signal gain. This product will be available in chip form.

## Main Features

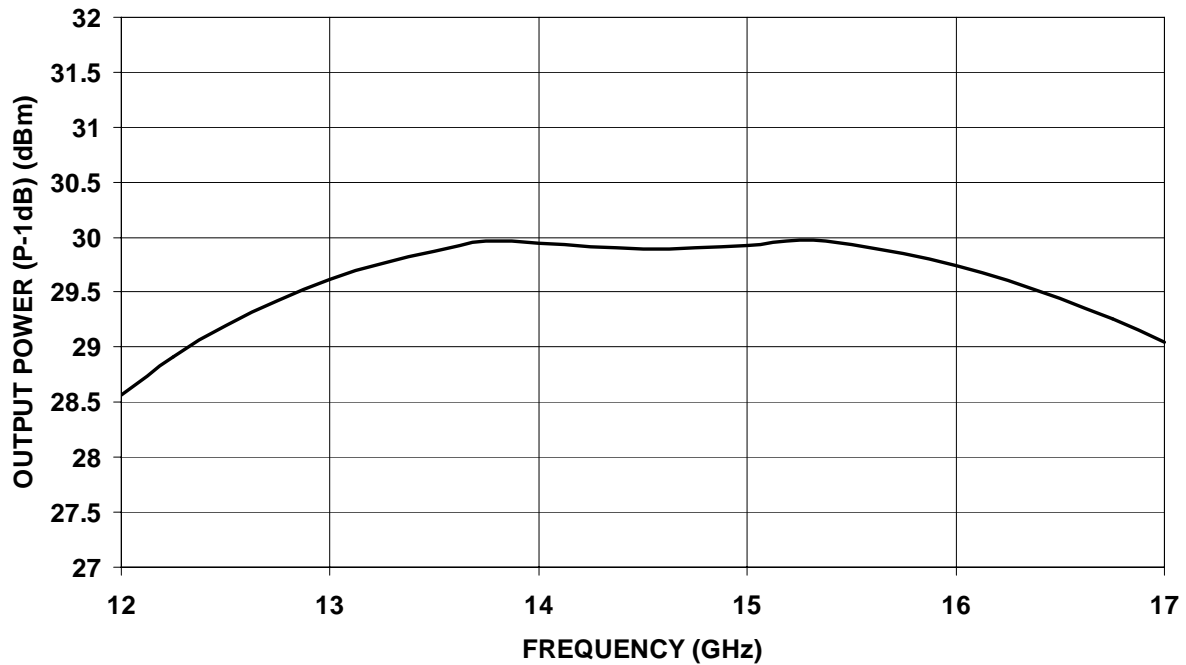
- Frequency Range: 13-16GHz
- Gain: 26dB
- Output Power (P-1dB): 29.5dBm
- Output TOI: 37.5dBm
- Input Return Loss: 15dB
- Output Return Loss: 15dB
- Bias: 9V, 0.4A
- Dimensions: 1.37 x 1.33 x 0.07 mm

## Predicted Gain & Return





Predicted Output Power at 1dB Gain compression

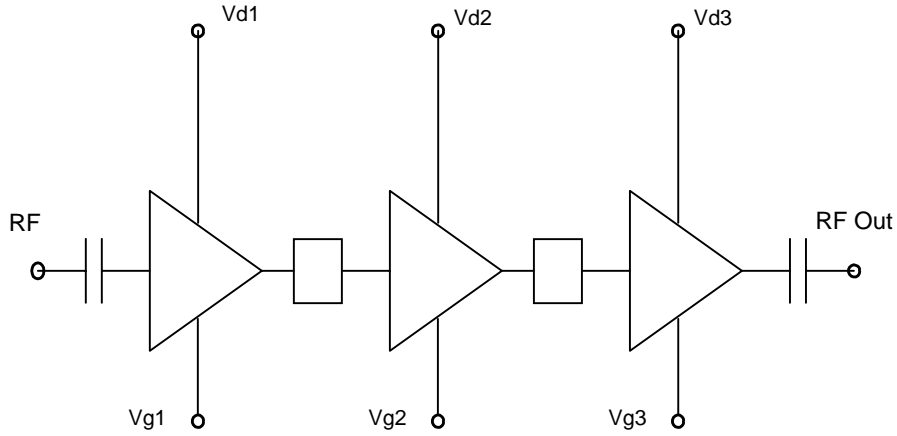


Symbol	Parameter	Values	Unit
Vds	Drain bias voltage_small signal	10.5	V
Ids	Drain bias current_small signal	650	mA
Vgs	Gate bias voltage	-2 to +0.4	V
Vdg	Maximum Drain Gate voltage (Vd-Vg)	+12	V
Pin	Maximum peak input power overdrive (2)	+18	dBm
Ta	Operating Temperature Range (3)	-45 to +80	C
Tstg	Storage Temperature Range	-55 to +125	C

- Operation of this device above any one of these parameters may cause permanent damage.
- Duration < 1 s
- AuSn solder mount to CuW or CuMo carrier assumed



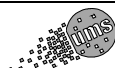
**Schematic**



**Typical Bias Conditions**

Tamb. = 25 °C

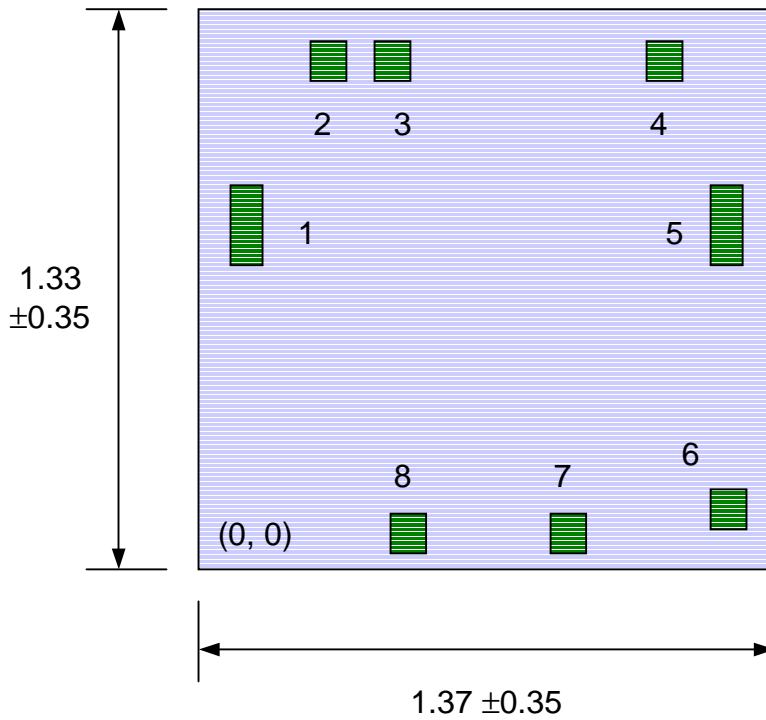
Symbol	Parameter	Values	Unit
Vd 1, 2, 3	Drain bias voltage	9.0	V
Vg 1, 2, 3	Gate bias voltage	-0.5	V
I <sub>dd</sub>	Total drain current	400	mA





**MMIC Outline & Bond Pads**

Not to scale, dimensions are in millimeters

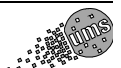
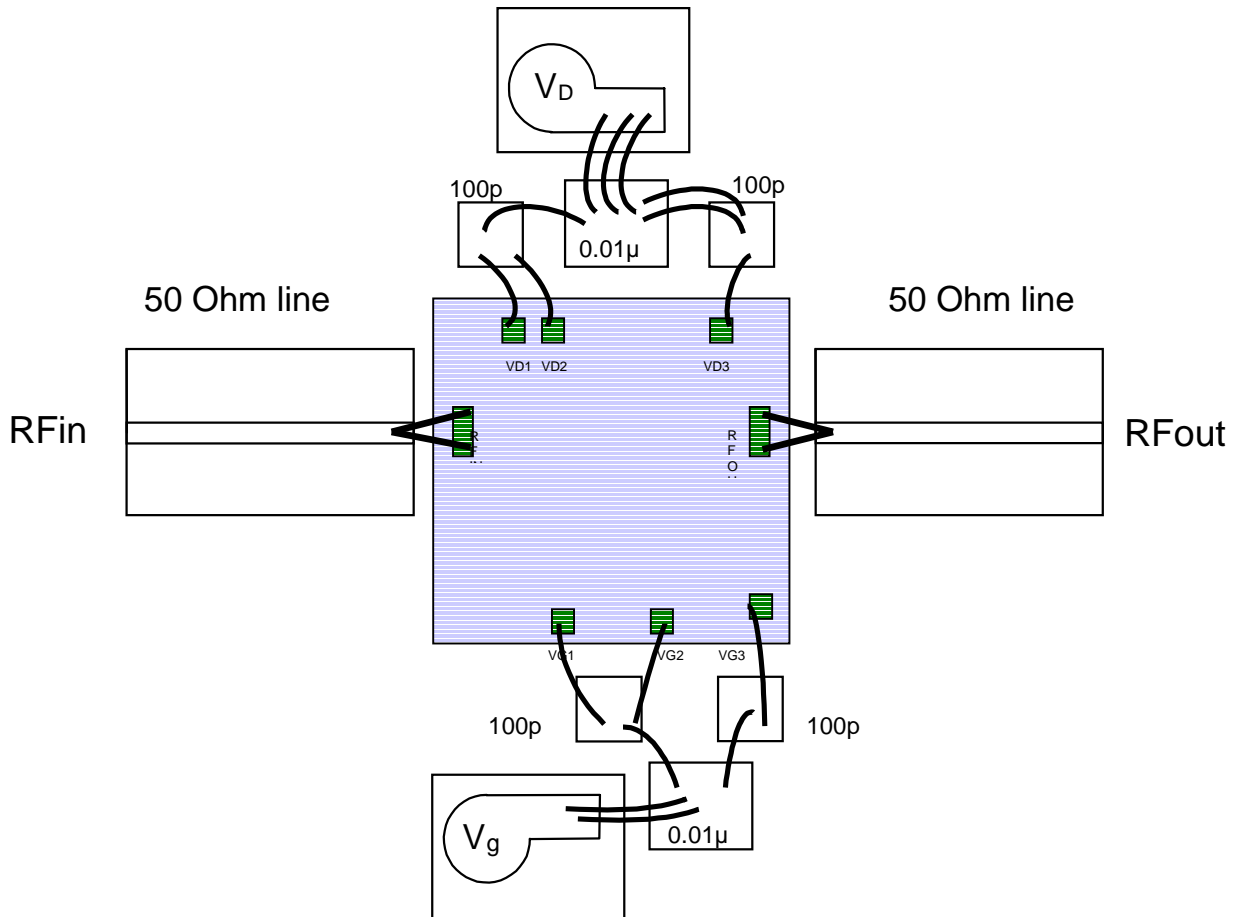


Bond Pad	Symbol	x-dim. (um)	y-dim. (um)	x-center (um)	y-center (um)
1	RF input	100	200	100	820
2	Vd1	100	100	285	1230
3	Vd2	100	90	450	1230
4	Vd3	100	100	1120	1235
5	RF output	100	200	1285	790
6	Vg3	100	100	1280	155
7	Vg2	100	100	895	105
8	Vg1	100	100	505	105

Chip size : 1370µm +/-35µm x 1330µm +/- 35µm



MMIC Assembly and Bonding Diagram ( not to scale )





## Ordering Information

Chip form : CHA5042-99F/00

Information furnished is believed to be accurate and reliable. However **United Monolithic Semiconductors S.A.S.** assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of **United Monolithic Semiconductors S.A.S.** Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. **United Monolithic Semiconductors S.A.S.** products are not authorised for use as critical components in life support devices or systems without express written approval from **United Monolithic Semiconductors S.A.S.**